

SYNOPSIS OF THE MEXICAN
AND CENTRAL AMERICAN REPRESENTATIVES
OF *LOBELIA* SECTION *TYLOMIUM*
(CAMPANULACEAE: LOBELIOIDEAE)

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ABSTRACT

A synopsis is presented of the seven species of *Lobelia* section *Tylomium* (K. Presl) Benth. & Hook. known to occur in Mexico and Central America. A previously undescribed species, *Lobelia zelayensis*, is described from recent collections made in northeastern Nicaragua. Two species, whose generic placement has been problematic, are herein transferred to *Lobelia*: *L. calochlamys* (J. D. Smith) comb. nov. (= *Pratia calochlamys* (J. D. Smith) E. Wimmer) and *L. guatemalensis* (B.L. Robinson) comb. nov. (= *Pratia guatemalensis* (B.L. Robinson) E. Wimmer).

Lobelia section *Tylomium* (K. Presl) Benth. & Hook. as defined by McVaugh (1940 and 1943) is a group of about twenty-five species of robust, suffrutescent plants distributed around the Caribbean occurring in the Antilles, Mexico and Central America and perhaps northern South America. The range of most species is narrowly limited and their isolated, often montane habitats result in morphologically sharply distinctive populations easily distinguished from one another. The recent intensive collecting program in Nicaragua in preparation of a flora of that country has resulted in a considerable increase in the floristic knowledge of that country and has also resulted in the discovery of a number of new species. One of these is a most distinctive species of *Lobelia* sect. *Tylomium* described in the following synopsis of the section as represented in Mexico and Central America (s.lat.).

The usually recognized sections of *Lobelia* as outlined by McVaugh (1940 and 1943) are not especially distinctive or at least the groupings are not so apparent as to stand out upon initial inspection. The species of Section *Tylomium* (K. Presl) Benth. & Hook, one of the six recognized by McVaugh as occurring in North America s.lat., are stout herbs or subshrubs whose corollas are red or reddish purple to brown, yellow, green or white but never blue. The seeds are ovoid to globose, smooth and usually polished and pitted. Included in the expanded concept of section *Tylomium* as employed in this synopsis are several species that were treated as

members of the genus *Pratia* Gaudichaud by McVaugh (1943) and Wimmer (1943, 1953 and 1968). Perhaps the most striking difference between *Pratia* and *Lobelia* is that the first-mentioned genus has an indehiscent berry as its fruit while *Lobelia* has a dehiscent capsule.

McVaugh (1943) treated five Jamaican species and three Central American species as the North American representatives of the baccate genus *Pratia* Gaudichaud, otherwise largely confined to the Eastern Hemisphere. Adams (1972, p. 734), stated that the distinction between baccate and capsular fruited lobelioids "is not clear in Jamaican species where all of the endemic species seem to form a natural group. Although the fruits are fleshy at first they tend to dehisce if sufficiently dried . . . None has been observed to produce a true berry." All were treated by Adams and by Rendle (in Fawcett & Rendle, 1936) in the genus *Lobelia* and all whose fruit was mentioned by either author were described as capsules. Of the seven mainland species the capsular fruit of all but one has been observed. Wimmer (1943, 1953 and 1968) recognized the genus *Pratia* in his publications and his concept and that of McVaugh for the American taxa was substantially the same if one were to ignore the considerable narrower specific concept held by Wimmer. Although I am unable to offer any first-hand insight into the generic merit of *Pratia* in the Old World or even of the few alleged South American representatives, I believe enough information has accumulated to conclude that the three Mexican and Central American representatives formerly placed in *Pratia* are better treated in *Lobelia*. Dehiscent capsules have been observed in both *Pratia tatea* and *Pratia guatamalensis* and both are here treated in the genus *Lobelia*. Mature fruit has not been noted to my knowledge in *Pratia calochlamys*. Without fruit, generic placement is problematic. Previous opinions have been that it is either *Centropogon* or *Pratia* - both baccate genera but there is no firm evidence for this generic placement either. To me it seems more likely that it is a *Lobelia* but proving it without more complete specimens is impossible.

KEY TO *LOBELIA* SECT. *TYLOMUM* IN MEXICO AND CENTRAL AMERICA

1. Flowers less than 3.9 cm long; corollas light green; filaments 2 cm long or less; anthers all distally tufted with stiff trichomes; plants of the Caribbean coast of Panama 1. *L. dresleri*.
1. Flowers 4 cm long or longer; corollas yellow, purple or reddish; filaments 2.5 cm long or longer; anthers variously pubescent but never with all 5 anthers only distally tufted with stiff trichomes; plants of Mexico through Nicaragua.
 2. Corollas externally yellow or yellowish green 2. *L. parvidentata*.
 2. Corollas externally reddish or purplish.

3. Anthers densely beset laterally throughout with brownish trichomes
2–3 mm long forming a dense tangle 3. *L. tatea*.
3. Anthers mostly with only the two lowermost with a penicillate tuft
of white trichomes but if lateral trichomes present, these shorter and
scattered and not forming a dense brownish tangle.
4. Calyx lobes 10 mm long or longer.
5. Calyx lobes broadly triangular, elliptic or lance-ovate, basally
5–12 mm wide; pedicellary bracteoles present; northern
Guatemala 4. *L. calocblanys*.
5. Calyx lobes narrowly lanceolate to linear, basally 2–2.5 mm
wide; pedicellary bracteoles lacking; northern Nicaragua .
. 5. *L. zelayensis*.
4. Calyx lobes less than 8 mm long.
6. Calyx lobes 4 mm or more wide at base; pedicels basally
bracteolate; corolla tube cleft dorsally only to within 1.5 cm
of base or less; leaf margins crenate 6. *L. guatemalensis*.
6. Calyx lobes 2 mm wide or less at base; pedicels ebracteolate;
corolla tube cleft to within ca. 3 mm of base; leaf margin
serrulate 7. *L. nubicola*.

1. *Lobelia dressleri* Wilbur, Ann. Missouri Bot. Gard. 61:889. 1974.
— TYPE: PANAMA. COLÓN: near Cocle del Norte near beach, 18 Aug 1972,
Dressler 4206 (HOLOTYPE: DUKE!; ISOTYPE: PMA!).

Suffruticose herb 1–2.5 m tall with the stem basally to 5 cm in diameter, apparently unbranched or nearly so and inconspicuously spreading short-pubescent. Leaves cauline, apparently numerous and rather evenly spaced along the stem, spreading-ascendent, thin papery to semichartaceous when dry, inconspicuously serrulate with appressed, incurved teeth, medially 1–3 per cm; blades elliptic, broadest slightly above the middle, acutely tapering both apically and basally, ca. 15–30 cm long and 3–7.5 cm wide, about 4–6 times as long as wide, glabrous on both the upper and lower surfaces; petioles glabrous, 1–2 cm long. Inflorescence 6–10(–25) dm long, about 40–70-flowered, narrowly cylindrical; bracts elliptic, tapering to either end and somewhat broader above the middle, inconspicuously serrulate, glabrous, the upper ca. 2 cm long and 6–8 mm wide and the lowermost up to 10 cm long and 3–4 cm wide; pedicels stiff, straight, strongly divaricate except distally where upturned at anthesis and somewhat incurved in fruit, 1.2–2.8 cm long in flower and 2–3 cm long in fruit, ca. 1–1.5 mm in diameter, densely spreading short-pubescent and bearing a pair of linear to lanceolate, serrulate, glabrous bracteoles 6–10 mm long and 1–2 mm wide about three-fourths or more the distance from the base of the pedicel to the hypanthium. Flowers 2.8–3.2 cm long; hypanthium at anthesis broadly hemispherical, glabrous or basally spreading short-pubescent, symmetrical or nearly so, 6–9 mm high

and 10–15 mm in diameter and with a free calycine rim ca. 2 mm high; calyx lobes at anthesis triangular or deltoid, glabrous, inconspicuously serrulate, 5–8 mm long and 2–4 mm wide at the base; corolla light green, glabrous, the tube ca. 10–15 mm long, distally strongly curved ventrally, dorsally slit at first to within ca. 6–8 mm and eventually to within 1 mm of the base and with 2 conspicuous lateral fenestrae ca. 4–6 mm high, the corolla lobes all strongly arching ventrally, the two upper linear or linear-lanceolate, 10–15 mm long and ca. 2 mm wide, acute and the 3 lower lobes 8–12 mm long and 2 mm wide, the filaments glabrous, 15–20 mm long, connate except for basal 4–5 mm, the anther tube 4–6 mm long, glabrous except for the dense tuft of white trichomes ca. 1 mm long at apex of each anther. Capsule somewhat depressed hemispheric, 8–12 mm high and 10–15 mm in diameter, ca. two-fifths superior, terminating in the tapering, 2–4 mm long, conical base of the style; seeds compressed, broadly oblong, ca. 0.8 mm long and 0.6 mm broad, shallowly pitted.

Distribution: known to me only from collections made in Colón Province, Panama, from near the beaches at Coclé del Norte and Miguel de la Borda.

Additional specimens examined: PANAMA. Colón: Miguel de la Borda along beach, 24 Apr 1970, *Croat 10016* (E. DUKE, MO); Coclé del Norte, along beach, Hammel 4571 (DUKE).

2. *Lobelia parvidentata* L. O. Williams, *Ceiba* 4:41. 1953. — TYPE: HONDURAS. MORAZÁN: in cloud forest, mountains above San Juancito, 2000 m, 22 Feb 1949, *Merrill, Williams & Molina 15663* (HOLOTYPE: EAP, not seen; ISOTYPES: F! GH! US!). [Merrill or Williams are listed first on different labels.]

Suffrutescent perennial herb or shrublet 5–20 dm tall, glabrous throughout. Leaves cauline, spreading, 1–20 per stem, the blades 3–22 cm long and 1.2–6 cm wide, elliptic to broadly lanceolate, apically acute to abruptly and shortly acuminate, basally cuneately tapering to somewhat rounded, marginally closely serrate-dentate with 35–90 purplish teeth along 80–90 percent of each margin, ca. 5–8 teeth per cm and the individual teeth pointing strongly towards the apex to widely divergent and 1–1.2 mm long on the outer margin and nearly as long on the inner margin; petiole slender, channeled above, 0.8–3 cm long. Inflorescence 10–20 cm long with 4–25 flowers each borne on a slender pedicel 3–8 cm long arising from the axil of the somewhat reduced upper leaves and the pedicels either ebracteolate or very rarely basally or subbasally bibracteolate. Flowers in anthesis 3.5–4.5 cm long; hypanthium 5–6 mm high and 6–9 mm in diameter, glabrous, \pm 10-nerved; calyx lobes 6–13 mm long and 1–5–2.5 mm wide basally, narrowly triangular, acute, either

denticulate with 2–3 teeth per side and these 0.2–0.3 mm long or rarely entire; corolla yellow or greenish-yellow, glabrous externally, reddish purple and puberulent internally especially along the base of the lower lip, the tube ca. 3 cm long and medially 2–3(4.5) mm in diameter, non-fenestrate or very tardily fenestrate but dorsally cleft to the base, the lobes ca. 10 mm long and 2 mm wide at base, linear, falcate; filaments glabrous except for the ciliate margins of the non-connate bases, ca. 25 mm long, the anther tube ca. 7 mm long with the 2 shorter anthers ca. 5 mm long and these apically white-tufted with trichomes 1.2–1.5 mm long but all anthers otherwise glabrous. Capsule dehiscing apically by 2 valves, ca. 1/3 superior, ca. 1–1.5 cm long; seed ca. 0.8 mm long and 0.6 mm wide, lenticular, shallowly reticulate.

Distribution: cloud forest in the mountains of the Departments of Santa Barbara and Morazán, Honduras.

Additional specimens examined: HONDURAS. Dept. Sta. Barbara: forested ridge S side of Montaña Sta. Barbara, alt. 2350 m, 7 Apr 1951, *Allen, Amour & Chable* 6133 (F, GH, US). Dept. Morazán: Montaña La Tigra, Tegucigalpa, 1600 m, 6 Apr 1980, *Amador* 118 (MO); Montaña La Tigra, Tegucigalpa, bosque nublado, 2333 m, 3 May 1980, *Cruez* 156 (MO); Cerro Nebulosa, 20 kms NE of Tegucigalpa, 7–14 Mar 1977, *Erazo, Cruez & Parly* 312 (MO); Montaña La Tigra, 2016 m, bosque nublado, *García* 212 (MO); bosque de nubes de Peña Blanca, Montaña de San Juancito, 2000 m, *Molina* 5927 (F); sobre rucas húmedas del bosque nebulosa Vuelta La Matraca en Montaña La Tigra norte de San Juancito, 2000 m, 24 Mar 1957, *Molina* 7765 (GH, US); bosque húmedo y nebuloso de Rancho Quemodo en Montaña La Tigra suroeste de San Juancito, 2000 m, 18 Mar 1959, *Molina* 8817 (F); abundantes en el bosque húmedo de Montaña La Tigra, 2000 m, 8 Mar 1962, *Molina* 10265 (F); mixed dense and wet cloud forests on mountain La Tigra, SW of San Juancito, 1800–2100 m, 2 Feb 1966, *Molina, Williams, Burger & Wallenta* 16970 (F, NY, US); on wet forest bank, Mountain La Tigra, between Jutiapa and Quebrado La Tigra, SE of San Juancito, 1800 m, 8 Feb 1967, *Molina* 20286 (F, GH, NY); wet dense cloud forest of La Tigra, Mt. San Juancito, 2100 m, 4 Feb 1968, *Molina & Molina* 214741 (F, NY); abundante en el bosque abierto y húmedo de Montaña La Tigra, 2200 m, 8 Mar 1962, *Williams & Molina* 10265 (LL); cloud forest area in mountains above San Juancito, 2200 m, 20 Feb. 1948, *Williams & Molina* 13680 (F, GH, US); floresta de nubes de la Montaña de la Tigra, suroeste de San Juancito, 200 m, *Williams & Molina* 17077 (F, GH, US); common in edge of cloud forest above San Juancito, 1800 m, 24 Mar 1951, *Williams* 17458 (F, GH, US); in cloud forest above San Juancito, 1800 m, 24 Mar 1951, *Williams* 17481 (F, GH, US); abundante en el bosque de nubes de Montaña La Tigra, cerca de San Juancito, 2000 m, 5 Oct 1953, *Williams & Molina* 18883 (F, GH, US); clearing in forest above San Juancito, 2000 m, 21 Feb 1954, *Williams & Williams* 18894 (F, GH, US).

3. *Lobelia tatea* (E. Wimmer) E. Wimmer in Engler's Pflanzenreich IV. 276b. 119. 1943. *Prattia tatea* E. E. Wimmer, Repert. Spec. Nov. Regni Veg. 29: 51, pl. 115, f. 1. 1931. — SYNTYPES: NICARAGUA. Prope Chontales, *R. Tate* 194 and *Seemann* 93 (K, neither seen). [McVaugh 1943, p. 113 indicated *Tate* 194 was the "type", i.e. lectotype.]

Erect, terrestrial herbs or shrublets (0.6) 1–2(3) m tall with glabrous

stems. Leaves cauline, slightly fleshy, the blades elliptic to oblong-obovate, glabrous, ca. 10–20(30) cm long and 4.5–7.5(12) cm wide, about 3 times as long as wide, apically acute to acuminate, basally cuneately narrowed and tapering into the petiole, marginally closely callously denticulate or serrulate with ca. 8–10 teeth per cm and each tooth ca. 0.5–8(1.0) mm long, the venation prominent below; petioles 1–3(4.5) cm long, glabrous. Inflorescence terminal, few- to many-flowered, subsecund, 1–3 dm long, the rachis glabrous; pedicels spreading-ascendent but distally \pm erect, 4–5 cm long in flower, glabrous, ebracteolate, each borne in the axil of a leafy, elliptic or oblong to more typically lanceolate, shortly petiolate, serrulate bract 1–5 cm long and 5–10 mm wide. Flowers 4.3–6.0 cm long; hypanthium hemispheric, glabrous, ca. 3–4 mm high and 5–6 mm wide, basally rounded; calyx lobes narrowly triangular, erect, acute, glabrous, denticulate, ca. 4–6 mm long; corolla glabrous, 4.0–4.6 mm long and basally roseate with purplish lobes, the tube slightly curved, 2.2–4.0 cm long, non-fenestrate but dorsally cleft to about the middle to almost to the base, the limb 5-parted but not 2-lipped, the lobes linear, ca. 15–20 mm long and basally 1.5–2 mm wide, cuspidately tipped; filaments mostly connate, 2.5–4.8 cm long, completely free from the corolla, basally distinct and there marginally ciliate-pubescent but otherwise glabrous, the anther tube ca. 9 mm long with a dense covering of coarse tawny to brownish or even purplish trichomes 2–3 mm long. Capsules about half inferior, 1.0–1.4 cm long and basally 8–11 mm in diameter, the upper half tapering and \pm obconic and the lower half broadly rounded and shortly cylindrical; seeds light brown to tawny, lenticular, flattened, ca. 0.5–0.7 mm long and nearly as broad, faintly and minutely foveate-reticulate.

Although Index Kewensis (Suppl. XI p., 140, 1953) lists the combination *Lobelia tatea* (E. Wimmer) E. Wimmer, this binomial was not listed even in synonymy in Wimmer's later works (1953 and 1968) and its acceptance as validly published has been questioned. Wimmer in first treating the genus *Pratia* in Engler's Pflanzenreich (1953, p. 119) excluded it from the genus *Pratia* in the following quotation presented in its entirety: "[*Pratia*] *Tatea* Wimm. = ? *Lobelia Tatea* Wimm."

When Wimmer dealt with the genus *Lobelia* in the war-interrupted account of the Lobelioideae, *Lobelia tatea* was not included in any manner - it was not even mentioned as a binomial to be excluded. In his expanded treatment of the genus *Pratia*, Wimmer (1953) included *P. tatea* but did not include *Lobelia tatea* even in synonymy. This together with the initial appearance of the binomial "*Lobelia tatea*" with a question mark led an anonymous reviewer to challenge the validity of Wimmer's combination in

the genus *Lobelia*. It would seem to me that Article 34.1(a) and 34.2 of the ICBN cover the question completely and indicate that *Lobelia tatea*, although published with a question mark, was published and accepted by the author *in the original publication*. I consider it to be a validly published binomial.

Distribution: southern Mexico south into Nicaragua.

Additional specimens examined: **MEXICO**. Oaxaca: roadside along Hwy. 175 through Sierra de Juárez between Tuxtepec and Oaxaca, 6.6 miles S of bridge at Valle Nacional; 750 m, 19 Feb 1979, *Croat 47929* (DUKE); roadside 12 mi S of Valle Nacional, Hwy. 175, 22 Mar 1978, *Poole, Bain & Kerr 1259* (MICH); 14 km al S de Valle Nacional, sobre carretera a Oaxaca, 780 m, 28 Nov 1979; *Wendt, Lott & García 2284* (DUKE, TEX). **GUATEMALA**. Baja Verapaz: Unión Barrios, in forests, Aug 1971, *Contreras s.n.* (US). **BELIZE**. El Cayo Distr.: on high ridge on hillside, Gorge Creek Section, Humming Bird Hwy., 26 Aug 1955, *Gentle 9392* (LL); **Stann Creek Distr.**: in clearing at base of hill, Humming Bird Hwy., 13 Sept 1954, *Gentle 9382* (LL). **HONDURAS**. Atlántida: near dam on the Danta River, 4–5 km SW of La Ceiba, 200–400 m, 4 May 1979, *Hazlet 3097* (DUKE). Cortes: Montaña Ildefonso norte de Cofradía, 2100 m, 17–18 Apr 1957, *Molina 8221* (F); sobre bancos húmedo de Montaña San Ildefonso entre Bañaderos y Cusuco, 1400 m, *Molina 11439* (E, LL, NY); bosque húmedo entre Buenos Aires y Bañaderos, Montaña San Aldefonso, 1500 m, 27 Mar 1963, *Molina 11575* (E, LL, NY, US). **El Paraíso**: pinares de Montaña Agua Fria, 1300 m, 14 Mar 1956, *Molina 7391* (E, LL); sobre paderones de Montaña San Cristóbal sur de Agua Fria, 1400 m, 15 Mar 1957, *Molina 7626* (E, GH, US); en paderones húmedos del bosque mixto pinoliquidambar del Higuero, SO de Mineral de Agua Fria, 1600 m, 15 Mar 1957, *Molina 7660* (F); bancos húmedos del bosque mixto de Montaña Agua Fria, 1400 m, 14 Mar 1963, *Molina 11329* (F); bancos húmedos del bosque mixto Montaña Agua Fria, 1400 m, 14 Mar 1963, *Molina 11347* (E, LL, NY, US); bosque mixto Montaña Teupasenti entre El Junquillo y Teupasenti, 1400 m, 26–27 Apr 1963, *Molina 11855* (E, LL, NY, US); matorrales húmedos del bosque mixt., Sierra El Chile entre El Junquillo y El Robledal, 1300 m, 12 Jan 1964, *Molina 14152* (LL, NY). **Gracios a Dios**: mountain peak, Camp Tiro, 2 mi NW of Bulebar on third northern branch of Quebrada Tiro, tributary of Río Plantano, 15° 43'N, 84° 50'W, 25 Mar 1981, *Saunders 1112* (NY). **Ocotepeque**: Aldea El Portín, Agua Caliente-Santa Rosa de Copán, 18.1 mi E of Santa Fé, 26.8 mi SW of bridge over Río Higuero near village of Cucuyagua Copán, 14° 28'N, 89° 15'W, 1800 m, 28 Jan 1987, *Croat & Hammon 63809* (DUKE). **Olancho**: road to Catacamas from Azuacalpa, pine and oak forest, 24 Feb 1982, *Blackmore & Heath 1892* (MO); along Río Olancho, on road between San Francisco de la Paz and Gualaco, 7.3 mi NE of San Francisco de la Paz, 14° 58'N, 86° 12'W, 1130 m, *Croat & Hammon 64188* (DUKE). **NICARAGUA**. Chontales: vicinity of Santo Domingo near summit of Peña Blanca, 800–850 m, 9 Apr 1961, *Bunting & Licht 1179* (DUKE, E, NY, US). **Jinotega**: San Ramón, lado E de las faldas del Cerro Kilambé, 13° 34'N, 85° 40'W, 800–900 m, *Moreno 7407* (DUKE); Las alturas de Kilambé, NE del Cerro Kilambé, 13° 37'N, 85° 40'W, 600–900 m, *Moreno & Sandino 7590* (DUKE); Cerro Kilambé, falde E del Pico Pedra Pelona, 13° 34'N, 85° 40'W, 1300–1400 m, 28 Mar 1981, *Moreno 7768* (MO). **Neuva Segovia**: Los Planes, 16 Sep 1985, *Moreno 26417* (MO); gallery forest along the Río Solonli (or Río Arriba Jalapa), 5 km N of Jalapa, 700–950 m, 5 Apr 1977, *Neill 1638* (DUKE). **Zelaya**: cloud forest along trail from Cerro El Inocente toward Cerro Saslaya near source of Caño Majagua, 13° 46'N, 85° 00–01'W, 1050–1150 m, 8 Mar 1978, *Stevens 6700* (MO).

4. *Lobelia calochlamys* (J.D. Smith) Wilbur, comb. nov. — *Centropogon calochlamys* J.D. Smith, Bot. Gaz. (Crawfordsville) 46:112. 1908. *Pratia calochlamys* (J.D. Smith) E Wimmer, Repert. Spec. Nov. Regni Veg. 29:50. 1931. — TYPE: GUATEMALA. ALTA VERAPAZ: in monte silvoso prope Cobán, 1650 m, Aug 1907, von *Tuerckheim* II, 1893 (HOLOTYPE: US!; ISOTYPES: GH! NY!).

Erect, glabrous herbs 2–6 dm tall with unbranched stems up to 6 mm in diameter. Leaves cauline, drying papery, the blades elliptic to elliptic-oblong or lance-oblong to ovate, 5–16 cm long and 2.5–5.5 cm wide, 2–4 times as long as wide, apically abruptly to gradually acuminate, basally cuneate and conspicuously tapering into a partially or distally winged petiole, marginally evenly and finely serrate throughout or for the upper 2/3 to 3/4 with (1) 2–10 serrations per cm and the teeth purplish and ca. 0.5–1 mm long; petioles rather stout, 1–3.5 cm long. Flowers solitary in the axils of the upper leaves or much-reduced bracts, 4–5.5 cm long; pedicels (2)4–6(8) cm long (at least in fruit), slender, not more than 1 mm in diameter and bearing 2 inconspicuous, filiform bracteoles 1–2 mm long either basally or up to 2 cm above the base. Hypanthium broadly campanulate or hemispheric with a free rim ca. 1.5 mm high; calyx lobes triangular, elliptic or lance-ovate, about 3 times as long as the height of the hypanthium, 11–21 mm long and 5–12 mm broad basally, conspicuously serrulate with often purplish teeth, apically acute or somewhat acuminate; corolla rose-purple or bright red tinged with purple, 3.5–4.5 cm long, glabrous externally but internally with short, hyaline, inflated trichomes, the tube 22–26 mm long, slightly curved, broadest basally, dorsally cleft to within 4–6 mm of the base, the lobes long-attenuate with the 2 upper lobes erect, 1.5–2.0 cm long and with the 3 lower lobes 7–10 mm long and slightly recurved, fused and forming a definite lower lip; filament tube 2.5–3 cm long sparingly to densely puberulent with stiff, whitish trichomes ca. 0.2–0.4 mm long either throughout or restricted to the commissural grooves, the distal portion of the grooves completely free of the corolla, the anther tube 7–9 mm long, bluish gray, glabrous externally but the 2 lower anthers penicillate with stiff, whitish trichomes 1–2 mm. Capsule apically dehiscent by 2 valves, hemispheric, not inflated, ca. 8 mm wide and 6 mm high; seeds light brown, ellipsoid or oblongoid, flattened, shallowly pitted-reticulate, ca. 0.5–1 mm long and 0.5–0.7 mm wide.

Distribution: northern Guatemala from 900–2400 m elevation.

Additional specimens examined: GUATEMALA. Alta Verapaz: in monte silvoso prope Cobán to Chama, 3000 ft, 1 Jun 1920, *Johnson* 299 (E US); Gebirgswalder, 1650 m, Aug 1907, von *Tuerckheim* II 1893 (A, MO). Baja Verapaz: du sylvia montaña, June, von *Tuerckheim* s.n. (A). Huehuetenango: Cerro Huitz between Barillas and Mimanhuitz, Sierra de los Cuchumatanes, 1600–2600 m, 14 Jul 1942, *Steyermark* 48545 (F); between

Xoxlac and Nacapuxlac, Sierra de los Cuchumatanes, 1650–2500 m, 17 Jul 1942, *Steyermark* 48916 (F); in stream bed in ravine above San Juan Ixcay, Sierra de los Cuchumatanes, 2400 m, 4 Aug 1942, *Steyermark* 48916 (F).

5. *Lobelia zelayensis* Wilbur, sp. nov. (Fig. 1).

Herba suffruticosa, 1–2 m alta, glabra. Petioli glabri, 2–5(-7) cm longi. Lamina foliorum elliptica vel lance-elliptica, ca. (8)10–15(20) cm longa et 2–6(8) cm lata, glabra, serrulata. Flores 5.0–5.8 cm longi, axillaris; pedicelli glabri, ebracteolati, 4–7 cm longi et 1 mm diametri; hypanthium 5–6 mm longum et 6–9 mm diametrum, glabrum; lobi calicis anguste triangulares, 11–15 mm longi, serrulati; corolla rubra, glabra; tubus ca. 2.5 cm longus et 4–7 mm diametro, non fenestratus sed in dorso usque ad basim fissus; lobi 20–25 mm longi, acuti; filamentae 3–3.5 cm longae, puberulentae; tubus antherarum 8–10 mm longi, glabri sed apices antherarum 2 barbati. Capsula 1.5 cm longa et 10–12 mm diam.

Suffrutescent herb or shrublet 1–1.5(2) m tall with glabrous stems mostly 3–8 mm in diameter. Leaves cauline, \pm spreading and ascendent, the blades (8)10–15(20) cm long and 2–6(8) cm wide, elliptic to lance-elliptic, apically acute to more typically acuminate with a sharply tapering tip 1–2.5 cm long, basally rounded to moderately cuneate, marginally sharply serrulate for approximately the distal three quarters with 2–4 purplish teeth per cm and each of these pointing strongly towards the apex with the outer margin 0.6–1.2 mm long and the inner margin 0.4–0.8(1.0) mm long; petiole glabrous, smooth, channeled above, 2–5(7) cm long. Flowers ca. 5.0–5.8 cm long, arising from the axils of the little reduced upper leaves; pedicels slender, glabrous, ascendent, ebracteolate, 4–7 cm long and ca. 1 mm in diameter; hypanthium broadly campanulate to hemispheric 5–6 mm high and 6–9 mm in diameter at anthesis, glabrous, indistinctly 10-nerved; calyx lobes 11–15 mm long and 2–2.5 mm wide basally, narrowly lanceolate to linear, acute, indistinctly serrulate with 1–3 minute teeth per side; corolla reportedly red or reddish purple externally and white within, glabrous externally and internally, the tube ca. 2.5 cm long and 4–7 mm in diameter, non-fenestrate but eventually dorsally cleft to within 1–2 mm of the base, the lobes narrowly linear, 20–25 mm long and 1.5–2 mm wide, acute; filaments 3–3.5 cm long, the tube minutely puberulent throughout, the anther tube 8–10 mm long, externally glabrous but the 2 lower anthers tufted with stiff sordid trichomes 1–1.5 mm long. Capsule dehiscing apically by 2 valves, approximately 1/3–1/2 superior, ca. 1.5 cm high and 10–12 mm in diameter; seeds ca. 0.8–1 mm long and 0.6 mm wide, lenticular, flattened, shallowly foveolate-reticulate.

TYPE: NICARAGUA. DEPTO. DE ZELAYA: Cerro El Hormiguero, W range; ca. 13 44'N, 85 00'W, elev 1100–1183 m; dense virgin elfin forest, 15 Apr 1979, *J. J. Pipoly* 5150 (HOLOTYPE: MO!; ISOTYPE: DUKE!).

Distribution: known only from Nicaragua.

Additional specimens examined: NICARAGUA. Jinotega: Peñas Blancas, 27 Dec 1973, *Atwood, Marshall & Neill* 6896 (MO). Zelaya: Cerro La Pimienta; 13° 44' 40" N, 84° 59' 55" O, bosque enano, 1000–1200 m, *Grijalva* 327 (DUKE, MO), Cerro Saslaya, 20 km W of Siuna, cloud forest, elev. 1100–1400 m, along eastern ridge of mountain, 5 May 1977, *Neill* 1829 (MO), Cerro Saslaya, elfin forest near summit at 1650 m, *Neill* 3850 (DUKE, MO), Cerro La Pimienta, northern slope facing La Garrapata, ca. 13° 45' N, 84° 59' W, elev. 900–1180 m, lower elfin forest, *Pipoly* 6041 (DUKE, MO); same locality, *Pipoly* 6060 (DUKE, MO).

6. *Lobelia guatemalensis* (B.L. Robinson) Wilbur, comb. nov. — *Centropogon guatemalensis* Robinson in J.D. Smith, Bot. Gaz. (Crawfordsville) 20:4. 1895. *Pratia guatemalensis* (B.L. Robinson) E. Wimmer, Repert. Spec. Nov. Regni Veg. 29: 50. 1931. — TYPE: GUATEMALA. ALTA VERAPAZ: Pansamala forest, Jun 1885, *von Tuerckheim* 728 (HOLOTYPE: GHE!; ISOTYPES: NY!).

Erect, terrestrial herbs with usually unbranched stems 3–4 dm tall and up to 5 mm in diameter, glabrous throughout except for tufts of axillary puberulence in the axils of the floral bracts. Leaves cauline, drying stiff-papery, the blades broadly ovate, obovate or broadly elliptic, mostly 10–20 cm long and 4–8 cm wide, usually 2–2.5 times as long as wide, apically abruptly short-acuminate and basally acute and cuneately ± tapering decurrently along the petiole, marginally crenate with 3–4 low teeth per cm; petioles stout, narrowly margined by the decurrent blade, 2–6 cm long. Inflorescence terminal, appearing racemose or subcorymbose, commonly with 10–25 flowers, 10–17 cm long; pedicels borne in the axils of bracts and these sharply differentiated from the leaves, the pedicels spreading, stiff, 2–4 cm long, ca. 1–1.5 mm in diameter, occasionally purplish with 2 filiform bracteoles 1–2 mm long at or very near the base. Hypanthium in anthesis short-campanulate, often purplish, ca. 6 mm high and about as wide, extending above the ovary for ca. 2 mm as a free rim, notably 10-costate, enlarging slightly in fruit; calyx lobes deltoid or narrowly triangular, blunt to subacute, ca. (3)5–7 mm long and basally 4–5 mm wide, entire to obscurely denticulate with the hypanthial costae extending into the base for 2–3 mm; corolla purplish red when dry, 4.5–6 cm long, glabrous externally while internally puberulent with colorless inflated trichomes within and at the base of the lower lip, the tube 23–30 mm long, broadest at the base and narrowing slightly to the apex, slightly curved, the dorsal sinus deeper than the 2 lateral sinu and extending to ca. 1.5–2 cm from base, the limb 2-lipped with the 2 upper lobes erect, narrowly subulate, 1.5–2.7 cm long and 4–6 mm wide at base, the 3 lobes of the lower lip linear or narrowly elliptic, acute, 8–18 mm long and 1–2.5 mm wide; filaments (30)35–41 mm long, basally distinct but connate throughout most of their length, completely free from



FIG. 1. *Lobelia zelayensis*. A. Isotype of *Lobelia zelayensis* Wilbur (Pipoly 5150, DUKE). B. Enlargement of isotype showing serrations of the leaf margin.

the corolla, externally densely puberulent throughout with inflated short trichomes, the anther tube 7.5–8.5 mm long, dark bluish gray (at least when dry) with the 2 shorter anthers densely white-tufted apically but otherwise either glabrous or sparsely tufted at base and near apex or occasionally with stiff trichomes on the connective. Fruit and seeds not seen.

The authorities of the binomial *Centropogon guatemalensis* is unsettled or in conflict in the literature as well as in the standard indices and hence some explanation of the usage employed here is desirable (McVaugh 1943 p. 114; Wimmer 1943 p. 119; Nash 1976 p. 429; Gray Index and Index Kewensis). The binomial when first published under J.D. Smith's byline and was there attributed to [B.L.] Robinson. The original description was not accompanied by a Latin diagnosis as were all of the treatments in that paper attributed to Donnell Smith. I consider this evidence that the original account was provided by B.L. Robinson and at most edited by J. Donnell Smith. Therefore, the basionym *Centropogon guatemalensis*, following Article 46.2 of the ICBN, should be attributed to "B.L. Robinson in J.D. Smith" or when shortened to B.L. Robinson alone.

Distribution: wet montane forest of northern Guatemala and Honduras.

Additional specimens examined: GUATEMALA. Alta Verapaz: near Finca Sepacuité, 26 Mar 1902, *Cook & Griggs* 167 (US); Finca Volcán to Cerro Sillab, Senehu, 27 Jul 1936, *Hatch & Wilson* 152 (E GH); Trece Aguas, 21 Apr 1906, *Leutton* 388 (US); Sepacuité, Oct 1901, *Owen* 11 (US). Baja Verapaz: between Purula and Panzal, 21 Apr 1905, *Pittier* 149 (E US), Wald bei Purula, 1700 m, Apr 1907, *von Turckheim* II 1739 (GH, NY, US). HONDURAS. Cortes: en bosque lluviosos de Montaña de Cusuco, Cordillera de Hdefonso, 1500–2000 m, 26 May 1956, *Molina* 7260 (LL).

7. *Lobelia nubicola* McVaugh, N. Amer. Fl. 32A: 94. 1943. — TYPE: GUATEMALA. CHIQUIMULA: in mixed Liquidambar forest below cloud forest, middle slopes of Montaña Norte to El Jutal, on Cerro Brujo, southeast of Concepción de las Minas, 1700–2000 m, 2 Nov 1939, *Steyermark* 31048 (HOLOTYPE: US; ISOTYPE: F!).

Shrubby plants 0.6–1.0(1.5) m tall, smooth, glabrous throughout. Leaves cauline, spreading, 10–30 per shoot and deciduous after one growing season, membranous when dry, lanceolate, apically attenuate-caudate, basally tapering, 5–12 cm long and 1–1.6 cm wide, mostly 6–10 times as long as wide, marginally shallowly crenate with 3–4 minute, serrulate, often purplish teeth per cm; petioles somewhat wing-margined, 1–2 cm long. Inflorescence of few-15 flowers each borne in the axil of a little-reduced, upper leaf on a purplish, spreading-ascendent pedicel 3–3.5 cm long in fruit and ca. 0.7 mm in diameter, apparently ebracteolate. Flowers ca. 4.5 cm long; hypanthium in anthesis turbinate or cup-shaped, ca. as broad as high, 7–8 mm high and broad; calyx lobes narrow-

ly triangular, obscurely denticulate, acute, 4–5 mm long and ca. 1.5 mm wide; corolla purple, externally glabrous, puberulent within along the base of the lower lip and along the abaxial side of the tube, the tube about 27 mm long, entire except for the dorsal slit extending to ca. 3 mm from base, cylindrical but enlarging distally to ca. 6 mm in diameter and narrowest ca. 5 mm above the base, the lobes linear-attenuate and all decurved-falcate with the 2 upper lobes ca. 15 mm long and 3 mm wide at base, the 3 lower lobes forming a lip ca. 13 mm long with each lobe ca. 7 mm long and 3 mm wide at base; filament tube ca. 28 mm long with the distal half glabrous, the filaments distinct basally but there weakly adherent to the corolla, the anther tube ca. 7 mm long, bluish-gray, the 2 shorter anthers apically white-tufted with stiff trichomes and the 3 longer anthers glabrous except for a few stiff bristle in the distal half. Capsule apically dehiscent by 2 valves; seeds not seen.

Distribution: montane forests in Guatemala and Honduras.

Additional specimens examined: GUATEMALA. Chiquimula: middle slopes of Montaña Norte to El Jutal, on Cerro Brujo, SE of Concepción de las Minas, 1700–2000 m, 2 Nov 1939, *Steyermark 31048* (F. US). HONDURAS. Ocotepeque: Pinares y liquidambares, 1500–2000 m, Camino de Yaruchel a Belén Gualcho, 2–15 Apr 1977, *Nelson, Romero, Rubis & Pereira 3943* (DUKE).

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